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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,716	01/02/2004	Yossi Shacham-Diamand	206,407	1400

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ABELMAN, FRAYNE & SCHWAB  
150 East 42nd Street  
New York, NY 10017-5612

EXAMINER

KLEMANSKI, HELENE G

ART UNIT PAPER NUMBER

1755

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/750,716

Applicant(s)

SHACHAM-DIAMAND ET AL.

Examiner

Helene Klemanski

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-92 is/are pending in the application.
- 4a) Of the above claim(s) 52-92 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6, 10-32 and 36-51 is/are rejected.
- 7) ☒ Claim(s) 7-9 and 33-35 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/4/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group I, claim 1-51 in the reply filed on February 15, 2006 is acknowledged.
2. Claims 52-92 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on February 15, 2006.

### ***Claim Objections***

3. Claims 8 and 34 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. It is the examiner's position that when the concentration of the molybdic acid monohydrate is zero, these claims fail to further limit the subject matter of claims 1 and 26 since there must be some source of molybdenum present in the composition.

### ***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 10, 11, 25, 36, 37 and 51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 10, 11, 36 and 37, the phrase "selected from" is considered indefinite since this is improper Markush language. It is the examiner's position that other materials could be present in the Markush group that were not intended by applicants by the use of the phrase "selected from" since this phrase does not exclude other materials. The examiner suggests the language "selected from the group consisting of" in place of this phrase. Applicants should note that this above phrase appears two times in claims 10 and 36.

In claim 25 and 51, the terms "RE-610" and "Triton X-100" are considered indefinite since the relationship between a trademark and the product it identifies is sometimes indefinite, uncertain or arbitrary. The formula or characteristics of the product may change from time to time and yet it may be sold under the same trademark. In the claims, every element or ingredient of the aqueous bath composition should be set forth in positive, exact, intelligible language, so that there will be no uncertainty as to what is meant. Arbitrary trademarks which are liable to mean different things at the pleasure of manufactures do not constitute such language. See *Ex parte Kattwinkel*, 12 U.S.P.Q. 11 and MPEP 608.01(v). The examiner suggests the deletion of the trademarks from the claims or the incorporation of generic terminology into these claims. Applicants should note however, that the examiner will allow amendment of the

Art Unit: 1755

trademarks only when accompanied by a proper showing that the amended subject matter is what the trademarks represent i.e. data sheets from manufactures.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 10-15 and 19-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Schneble, Jr. et al. (US 3,650,777).

Schneble, Jr. et al. teach electroless copper plating baths comprising water, a source of copper ions such as cupric sulfate, a reducing agent such as sodium borohydride, potassium borohydride, sodium trimethoxy borohydride, isopropylamine borane and morpholine borane, a complexing agent such as Rochelle salts, EDTA and salts thereof, nitrilotriacetic acid and salts thereof, gluconic acid, gluconates and triethanolamine and a pH regulator such as sodium hydroxide in the amounts as claimed by applicants. The electroless copper baths may further comprise stabilizers such as molybdenum and a surfactant. The molybdenum is supplied to the bath as molybdic trioxide, molybdenum pentachloride, MoCl<sub>5</sub>, alkali and alkaline earth metal

Art Unit: 1755

salts of molybdenum and ammonium molybdate in an amount of 0.1-3,000 microgram/L. The baths were maintained at a pH of about 12 and at a temperature of 60 °C. See col. 1, lines 31-41 and lines 68-72, col. 2, lines 5-22 and lines 57-74, col. 3, lines 5-18 and lines 31-35, col. 4, lines 1-7, example 1, col. 5, lines 52-55 and claims 1, 3-7 and 9. The electroless copper baths as taught by Schneble, Jr. et al. appear to anticipate the present claims.

8. Claims 1-3, 10-16 and 19-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Chebiam et al. (US 2004/0038073).

Chebiam et al. teach an electroless plating bath comprising 2-50g/L of a primary metal such as copper and 1-40 g/L of a secondary metal such as molybdenum, a pH adjusting agent such as tetramethylammonium hydroxide, 50-1,000 g/L of a complexing/buffering agent such as ammonium sulphate, 1-30 g/L of at least one reducing agent such as sodium borohydride, dimethylaminoborane, diethylaminoborane, morpholine borane and optionally 0.01-5 g/L of a wetting agent such as RHODAFAC RE 610 or TRITON X-100. The bath is maintained at a temperature of 20-60 °C and a pH of 7-10. See paras. 0011-0018, paras. 0024-0032, para. 0037, para. 0042, para. 0050 and claims 1-6 and 10-12. The electroless plating bath as taught by Chebiam et al. appears to anticipate the present claims.

The only limitations in the claims not found by the examiner are the resistivity or the particular properties in claims 21 and 47. However, these limitations are considered inherent because there does not appear to be any reason why the cited reference would

Art Unit: 1755

not contain an electroless copper plating bath with applicants claimed resistivity or the particular properties in claims 21 and 47.

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 26-32, 36-42 and 45-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneble, Jr. et al. (US 3,650,777) in view of Martyak et al. (US 5,306,336).

Schneble, Jr. et al. is cited and relied upon for the above stated reasons.

Schneble, Jr. et al. fail to teach the addition of a soluble source of citrate ions to the electroless plating bath as claimed by applicants.

Martyak et al. teach a similar electroless copper plating bath comprising a source of copper ions, a reducing agent and a chelating (i.e. complexing) agent such as EDTA or an alkali metal salt of citric acid. See col. 1, line 67 – col. 2, line 2, col. 3, lines 6-21 and claim 3.

Therefore, it would have been obvious to one having ordinary skill in the art to have replaced the EDTA complexing agent of Schneble, Jr. et al. with the alkali metal salt of citric acid of Martyak et al. because the substitution of art recognized equivalents as shown by Martyak et al. would have been within the level of ordinary skill in the art.

Art Unit: 1755

11. Claims 17, 18, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneble, Jr. et al. in view of Martyak et al. as applied to claims 1-6, 10-15, 19-24, 26-32, 36-42 and 45-51 above, and further in view of Sricharoenchaikit et al. (US 5,203,911).

Schneble, Jr. et al. and Martyak et al. are cited and relied upon for the above stated reasons. Schneble, Jr. et al. and Martyak et al. both fail to teach the addition of ammonium hydroxide to the electroless plating baths as claimed by applicants.

Sricharoenchaikit et al. teach a similar electroless copper plating bath comprising a source of copper ions, a reducing agent, a chelating agent, stabilizers and a Ph adjustor such as sodium hydroxide or ammonium hydroxide. See col. 4, line 60 – col. 5, line 56 and claim 1.

Therefore, it would have been obvious to one having ordinary skill in the art to have replaced the sodium hydroxide pH adjusting agent of Schneble, Jr. et al. with the ammonium hydroxide pH adjusting agent of Sricharoenchaikit et al. because the substitution of art recognized equivalents as shown by Sricharoenchaikit et al. would have been within the level of ordinary skill in the art.

#### ***Allowable Subject Matter***

12. Claims 79 and 33-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.



Art Unit: 1755

13. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art references teach or fairly suggest the use of molybdic acid monohydrate as the source of molybdenum ions as claimed by applicants.

### ***Conclusion***

The remaining references listed on forms 892 and 1449 have been reviewed by the examiner and are considered to be cumulative to or less material than the prior art references relied upon in the above rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helene Klemanski whose telephone number is (571) 272-1370. The examiner can normally be reached on Monday-Friday 5:30-2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1755

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Helene Klemanski  
Primary Examiner  
Art Unit 1755



HK  
March 19, 2006